IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of	Atty. Docket
MARK J.W. MERTENS ET AL.	PHNL 021458
Serial No.: 10/535,298	Group Art Unit: 2615
Filed: May 17, 2005	Examiner: P. Lee

AUDIO BASED DATA REPRESENTATION APPARATUS AND METHOD

Commissioner for Patents
P.O. Box 1450
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Sir:

APPEAL BRIEF

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(i) Real Party in Interest

The real party in interest in this application is KONINKLIJKE PHILIPS ELECTRONICS N.V. by virtue of an assignment from the inventors recorded on May 17, 2005, at Reel 017266, Frame 0996.

(ii) Related Appeals and Interferences

There are no other appeals and/or interferences related to this application.

(iii) Status of Claims

Claims 1-10 stand finally rejected by the Examiner. Claim 11 has been cancelled. The rejection of claims 1-10 is being appealed.

(iv) Status of Amendments

There was one Response filed on October 2, 2008, after final rejection of the claims on August 7, 2008, this Response having been considered by the Examiner.

(v) Summary Of Claimed Subject Matter

The subject invention relates to:

Claim 1

A data representation apparatus for representing data by means of an audio signal ***(Fig. 1a: 100; specification: page 7, lines 10-11)***, said data representation apparatus comprising an audio processing unit ***(Fig. 1a: 102; specification: page 7, lines 11-13)*** for delivering the audio signal ***(Fig. 1a: o; specification: page 7, line 12)*** with a characteristic ***(Fig. 1a: (C); specification: page 7, line 12)*** dependent upon a positionless data signal ***(Fig. 1a: p; specification: page 7, lines 13-15)*** having at least a first value and a second value; and a mapping unit for mapping the first value of the positionless data signal to a first position in three-dimensional space, and the second value of the positionless data signal to a second position in three-dimensional space ***(Fig. 1a: 132; specification: page 9, lines 14-16)***, wherein the audio processing unit ***(Fig. 1a: 102)*** changes the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value ***(Fig. 2; specification: page 11, lines 1-9)***.

Claim 2

The data representation apparatus as claimed in claim 1, wherein the audio processing unit ***(Fig. 1a: 102)*** comprises a filter ***(Fig. 1a: 140; specification: page 10, lines 1-9)*** for applying a head related transfer functions ***(Fig. 1a: HRTF)*** to an input audio signal ***(Fig. 1a: i)*** to obtain the output audio signal ***(Fig. 1a: o(C))*** appearing to originate from the first position and the second position.

Claim 3

The data representation apparatus as claimed in claim 1, wherein said data representation apparatus further comprises a data signal distributor ***(Fig. 1a: 122; specification: page 7, line 30 to page 8, line 7)*** for delivering the positionless data signal, derivable from a measurement from a measurement device ***(Fig. 1a: 104)***, to the audio processing unit ***(Fig. 1a: 102)***.

Claim 6

The data representation apparatus as claimed in claim 1, wherein said data representation apparatus further comprises specification means ***(Fig. 1a: 150; specification: page 9, lines 16-20)*** for specifying a preferred mapping for the mapping unit.

Claim 7

The data representation apparatus as claimed in claim 1, wherein said data representation apparatus further comprises selection means ***(Fig. 1a: 117; specification: page 10, lines 24-27)*** for enabling presentation of a first set of data signal values by a first type of the audio signal and a second set of data signal values by a second type of the audio signal.

Claim 8

A system for representing data by means of an audio signal, said system comprising an audio source for supplying an input audio signal ***(Fig. 1a: 114, 116; specification: page 7, lines 22-24)***; a source of a positionless data signal having at least a first value and a second value ***(Fig. 1a: 104, 124; specification: page 7, lines 25-27)***; a sound production device ***(Fig. 1a: 112; specification: page 7, lines 18-20)***; and a data representation apparatus for representing data by means of the audio signal ***(Fig. 1a: 100; specification: page 7, lines 10-11)***, wherein the data representation apparatus comprises an audio processing unit ***(Fig. 1a: 102; specification: page 7, lines 11-13)*** for providing the audio signal ***(Fig. 1a: o; specification: page 7, line 12)*** to the sound production device ***(Fig. 1a: 112)*** with a characteristic ***(Fig. 1a: (C); specification: page 7, line 12)*** dependent on the value of the positionless data signal ***(Fig. 1a: p; specification: page 7, lines 13-15)***; and a mapping unit for mapping the first value of the positionless data signal to a first position in three-dimensional

space, and the second value of the positionless data signal to a second position in three-dimensional space ***(Fig. 1a: 132; specification: page 9, lines 14-16)***, wherein the audio processing unit changes the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value ***(Fig. 2; specification: page 11, lines 1-9)***.

Claim 9

A method of representing data by means of an audio signal, said method comprising the steps of processing and delivering the audio signal ***(Fig. 1a: 102; specification: page 7, lines 11-13)*** with a characteristic dependent on a positionless data signal ***(Fig. 1a: p; specification: page 7, lines 13-15)*** having at least a first value and a second value; and mapping the first value of the positionless data signal to a first position in three-dimensional space, and the second value of the positionless data signal to a second position in three-dimensional space ***(Fig. 1a: 132; specification: page 9, lines 14-16)***, wherein the processing and delivering step includes changing the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the

positionless data signal has the second value ***(Fig. 2; specification: page 11, lines 1-9)***.

Claim 10

A computer-readable medium having stored thereon a computer program for execution by a processor ***(Fig. 6: 600; specification: page 13, lines 27-29)***, enabling the processor to execute the method of claim 9.

(vi) Grounds of Rejection to be Reviewed on Appeal

(A) Whether the invention, as claimed in claims 1 and 3-10, is unpatentable, under 35 U.S.C. 103(a), over U.S. Patent 6,785,667 to Orbanes et al.

(B) Whether the invention, as claimed in claim 2, is unpatentable, under 35 U.S.C. 103(a), over Orbanes et al. in view of U.S. Patent 5,987,142 to Courneau et al.

(vii) Arguments

35 U.S.C. 103(a) states:

> "(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made."

(A) Claims 1 and 3-10 Unpatentable Over Orbanes et al.

The Orbanes et al. patent discloses a method and apparatus for extracting data objects and locating them in virtual space, in which the system enables "the user to view, search through and interact with information through a virtual environment, which is related to a selected physical paradigm, in an unrestricted manner" (col. 1, lines 17-21). In particular, as described in Orbanes et al. at col. 7, lines 57-63, "FIG. 1 is a schematic diagram depicting an exemplary embodiment of a viewing a system 100 in accord with the invention. The viewing system 100 includes an extractor module 102, a stylizer module 104, a template 105, a protocolizer 106, user controls 107, and a display 108, which present data objects to the user in a virtual three dimensional space 110."

The subject invention relates to a data representation apparatus which provides, to a user of the apparatus, an audio signal processed such that it seems to originate from different spatial positions depending on the value of a positionless data

signal. This is described in the specification on page 8, line 27 to page 9, line 5, in which the data representation apparatus may be arranged in an MP3 player where the positionless data signal relates to the pace of the user. In one embodiment, a beep may be added to the music being reproduced, the spatial positioning of the beep being indicative to the user of his/her pace, the position directly in front of the user indicating he/she is running at his/her desired pace.

The Examiner indicates "Orbanes discloses a data representation apparatus for representing data by means of an audio signal. In one embodiment Orbanes teaches that the system would respond to voice commands (reads on the claimed positionless data, with different commands corresponding to the first value and the second value). See col. 37, lines 60-64."

The portion of Orbanes et al. noted by the Examiner states:

> "Other enhancements to the system 100 include using voice recognition. According to one embodiment, the user can speak all of the available system commands, such as, "zoom in", "zoom out", "pan left", select <object> where <object> is a word(s) in a database."

It is not clear to Appellants how the Examiner is equating this disclosure in Orbanes et al. with the claim limitations "A data representation apparatus for representing data by means of an audio signal" and "an audio processing unit for delivering the audio signal with a characteristic dependent upon a positionless data signal having at least a first value and a second value".

The Examiner further states "Orbanes teaches that the audible sound is generated by mapping a first action (for example, zoom in)

to a first position in a three-dimensional space, and the second action to a second position (col. 38, lines 6-8) and the audio processing unit changes the characteristic of the audio signal (col. 38, lines 2-15)."

This portion of Orbanes et al. (actually col. 38, lines 1-15) states:

> "In an embodiment with sound, the system 100 coordinates the sound with the zooming to enhance further the virtual three-dimensional effect. For example, the closer the user virtually navigates to a data object, the louder the sound of that data object becomes. As the user zooms into a map of a city, the closer to the street detail the user gets, the louder the street noise becomes. The sound can also be coordinated with what hierarchical level the user is on. For example, when on a street of a city, the user hears typical street noises associated with that location. As the user zooms into a restaurant on that street, the sounds change from the street noises to typical restaurant sounds associated with that particular restaurant. As the user zooms in for more restaurant detail, the restaurant sounds get louder, as discussed above."

From the above, it appears that Orbanes et al. "maps" the loudness of the audio signal to the voice commands, e.g., in the case of a user of the system viewing a map, the audio signal would be "street noise". By then using the voice command "zoom in", simultaneously with the display zooming in to the "street level", the volume of the "street noise" increases.

However, Appellants submit that there is no disclosure of the claims limitations "a mapping unit for mapping the first value of the positionless data signal to a first position in three-dimensional space, and the second value of the positionless data signal to a second position in three-dimensional space" and

"wherein the audio processing unit changes the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value".

In the Final Office Action, the Examiner adds:

> "On col. 38, lines 1-15, Orbanes clearly discloses that the data (the degree of zoom) is represented by the level of audio signal. An audio signal processing unit would generate a louder sound, or a different sound when the data (for example, zoom in) is a first value. The audio signal processing unit would generate a softer sound, or another different sound when the data (for example, zoom out) is a second value. The zoom in command would map the command to a first position in a 3-D space (such as in a restaurant) and zoom out command would map the command to a second position in a 3-D space (such as in a street)."

Appellants submit that while Orbanes et al. changes a characteristic of the audio sound based on the zoom position, this zoom position relates to a virtual display on some display device. Note that col. 38, lines 1-3 state "In an embodiment with sound, the system 100 coordinates the sound with the zooming to enhance further the virtual three-dimensional effect." Referring to Orbanes et al. at col. 7, lines 57-63, system 100 is a viewing system with a display 108 "which present data objects to the user in a virtual three dimensional space 110." Hence, Appellants submit that Orbanes et al. merely changes the volume of the audio signal based on the zooming being applied to the object being displayed. Appellants further submit that there is no disclosure or suggestion of "a mapping unit for mapping the first value of the positionless data

signal to a first position in three-dimensional space, and the second value of the positionless data signal to a second position in three-dimensional space" and "the audio processing unit changes the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value".

(B) Claim 2 Unpatentable Over Orbanes et al. And Courneau et al.

The above arguments concerning Orbanes et al. are incorporated herein.

The Courneau et al. patent discloses a system of sound spatialization and method personalization for the implementation thereof, in which sound signals representative of a respective number of sources are processed such that they appear from particular positions to a user of the system.

Claim 2 includes the limitation "the audio processing unit comprises a filter for applying a head related transfer functions to an input audio signal to obtain the output audio signal appearing to originate from the first position and the second position".

The Examiner now states "Courneau teaches that the HRTF is being used to simulate the virtual sound environment. HRTFs are functions describing the delay, the frequency response and the amplitude response of the sound at the two ear drums of the user.

Thus, it would have been obvious to one of ordinary skill in the art to modify Orbanes in view of Courneau by using a filter as a function of HRTF to generate audio signal in order to simulate a more realistic sound effect in a virtual environment."

Appellants first submit that there is no incentive or motivation for combining Orbanes et al. with Courneau et al., in that Orbanes et al. is basically a viewing system, and mapping the audio signal to different positions in three-dimensional space would detract the user's attention from the display screen, thereby defeating the utility of the Orbanes et al. invention.

The Examiner now states:

> "Orbanes suggests presenting a user with information as closely mimics physical paradigms (see abstract). Controlling the loudness of the sound signal alone would not be able to simulate the changing sound environment with sufficient detail. Simulating sound using HRTF would provide the listener with a more realistic sound. For example, when the command is to pan left, controlling the loudness would increase all the sound level regardless whether the sound is from the left or right. By using HRTF, the sound source at the left should be enhanced more than the sound source at the right. Therefore, it would have been obvious to modify Orbanes with Courneau for the purpose of generating a more realistic sound to match the select environment."

Appellants submit that the Examiner may not simply excise phrases from Orbanes et al. out of context in an attempt to show motivation for the combination. The **first** sentence of the Abstract of Orbanes et al. states "The invention provides method and apparatus for viewing information." The Examiner paraphrases a portion of the Abstract of Orbanes et al. and states "Orbanes suggests presenting a user with information as closely mimics

physical paradigms". However, the full sentence from the Abstract states "By presenting information to the user in a way that more closely mimics physical paradigms, **the system provides an intuitive mechanism for the user to view, search through and interact with displayed information in an unrestricted manner**." (emphasis added).

Clearly Orbanes et al. is referring to the display of information.

Further, if one were to use the analogy of the Examiner "For example, when the command is to pan left, controlling the loudness would increase all the sound level regardless whether the sound is from the left or right. By using HRTF, the sound source at the left should be enhanced more than the sound source at the right", then this would be a position-dependent data signal as opposed to a positionless data signal as set forth in the claims of the subject invention.

Further, Appellants submit that Courneau et al. does not supply that which is missing from Orbanes et al., i.e., "a mapping unit for mapping the first value of the positionless data signal to a first position in three-dimensional space, and the second value of the positionless data signal to a second position in three-dimensional space" and "the audio processing unit changes the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value".

Based on the above arguments, Appellants believe that the subject invention, as claimed, is not rendered obvious by the prior art and is patentable thereover. Therefore, Appellants respectfully request that this Board reverse the decisions of the Examiner and allow this application to pass on to issue.

Respectfully submitted,

by __/Edward W. Goodman/_____
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Attorney

(viii) Claims Appendix

1. (Previously Presented) A data representation apparatus for representing data by means of an audio signal, said data representation apparatus comprising:

an audio processing unit for delivering the audio signal with a characteristic dependent upon a positionless data signal having at least a first value and a second value; and

a mapping unit for mapping the first value of the positionless data signal to a first position in three-dimensional space, and the second value of the positionless data signal to a second position in three-dimensional space,

wherein the audio processing unit changes the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value.

2. (Previously Presented) The data representation apparatus as claimed in claim 1, wherein the audio processing unit comprises a filter for applying a head related transfer functions to an input audio signal to obtain the output audio signal appearing to originate from the first position and the second position.

3. (Previously Presented) The data representation apparatus as claimed in claim 1, wherein said data representation apparatus further comprises a data signal distributor for delivering the positionless data signal, derivable from a measurement from a measurement device, to the audio processing unit.

4. (Previously Presented) The data representation apparatus as claimed in claim 1, wherein the mapping unit maps a collection of nominal values of the positionless data signal to predetermined regions of three-dimensional space.

5. (Previously Presented) The data representation apparatus as claimed in claim 1, wherein the mapping unit maps a collection of numerical values of the positionless data signal to positions on a curvilinear locus in three-dimensional space.

6. (Previously Presented) The data representation apparatus as claimed in claim 1, wherein said data representation apparatus further comprises specification means for specifying a preferred mapping for the mapping unit.

7. (Previously Presented) The data representation apparatus as claimed in claim 1, wherein said data representation apparatus further comprises selection means for enabling presentation of a first set of data signal values by a first type of the audio signal

and a second set of data signal values by a second type of the audio signal.

8. (Previously Presented) A system for representing data by means of an audio signal, said system comprising:

an audio source for supplying an input audio signal;

a source of a positionless data signal having at least a first value and a second value;

a sound production device; and

a data representation apparatus for representing data by means of the audio signal,

wherein the data representation apparatus comprises:

an audio processing unit for providing the audio signal to the sound production device with a characteristic dependent on the value of the positionless data signal; and

a mapping unit for mapping the first value of the positionless data signal to a first position in three-dimensional space, and the second value of the positionless data signal to a second position in three-dimensional space,

wherein the audio processing unit changes the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value.

9. (Previously Presented) A method of representing data by means of an audio signal, said method comprising the steps of:

processing and delivering the audio signal with a characteristic dependent on a positionless data signal having at least a first value and a second value; and

mapping the first value of the positionless data signal to a first position in three-dimensional space, and the second value of the positionless data signal to a second position in three-dimensional space,

wherein the processing and delivering step includes changing the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value.

10. (Previously Presented) A computer-readable medium having stored thereon a computer program for execution by a processor, enabling the processor to execute the method of claim 9.

11. (Cancelled).

(ix) Evidence Appendix

There is no evidence which had been submitted under 37 C.F.R. 1.130, 1.131 or 1.132, or any other evidence entered by the Examiner and relied upon by Appellant in this Appeal.

(x) Related Proceedings Appendix

Since there were no proceedings identified in section (ii) herein, there are no decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 C.F.R. 41.37.